

Notice of Allowability

Application No.

10/743,253

Examiner

Jennifer Doan

Applicant(s)

CARR ET AL.

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2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed 10/25/2006.
2. ☒ The allowed claim(s) is/are 1,4-13,16-23,25,27-29,31-46.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


JENNIFER DOAN
PRIMARY EXAMINER

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

Response to Amendment

1. Applicant's amendment, filed on October 25, 2006, has been fully considered and entered.

Reasons for Allowance

2. Claims 1, 4-13, 16-23, 25, 27-29 and 31-46 are allowed.

3. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to disclose or reasonably suggest all the limitations recited in independent claims 1 and 12. Specifically, the prior art of record fails to disclose or suggest a method and an apparatus of a device comprising an optical waveguide having a first grating, wherein at least a portion of the waveguide has a function layer adapted to bind an analyte; the first grating has an optical reflection band characterized by a center wavelength and the binding shifts the center wavelength in combination with the other limitations of claims 1 and 12.

Claims 4-11 depend from claim 1.

Claims 13 and 16-21 depend from claim 12.

The prior art of record also fails to disclose or reasonably suggest all the limitations recited in independent claim 22. Specifically, the prior art of record fails to

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disclose or suggest a device comprising a Mach-Zehnder interferometer (MZI) having two arms wherein a section of the resonator on one arm has a functional layer adapted to bind an analyte, wherein the optical characteristics of the resonator change when the analyte binds to the functional layer in combination with the other limitations of claim 22.

Claims 23 and 38 depend from claim 22.

The prior art of record also fails to disclose or reasonably suggest all the limitations recited in independent claims 25 and 29. Specifically, the prior art of record fails to disclose or suggest a method and an apparatus of a device comprising an optical waveguide having a first grating, wherein at least a portion of the waveguide has a function layer adapted to bind an analyte; the device further comprises one or more other waveguide, each having a grating, wherein each grating has an optical reflection band characterized by a center wavelength and at least two gratings have different reflection bands; the device further comprises an arrayed waveguide grating (AWG) having an input port and two or more output ports coupled to the two or more optical waveguides, wherein, for each optical waveguide, the AWG is adapted to route light having a corresponding center wavelength from the input port to the output port coupled to the optical waveguide in combination with the other limitations of claims 25 and 29.

Claims 27 and 28 depend from claim 25.

Claim 31 depends from claim 29.

The prior art of record also fails to disclose or reasonably suggest all the limitations recited in independent claim 32. Specifically, the prior art of record fails to disclose or suggest a device comprising an optical waveguide having a first grating, wherein at least a portion of the waveguide has a function layer adapted to bind an analyte; the device comprises a Mach-Zehnder interferometer (MZI) having two arms, wherein one arm includes the optical waveguide, wherein the optical waveguide has a second grating and the first and second gratings form an optical resonator in combination with the other limitations of claim 32.

Claims 33 and 34 depend from claim 32.

The prior art of record also fails to disclose or reasonably suggest all the limitations recited in independent claim 35. Specifically, the prior art of record fails to disclose or suggest a method for detecting an analyte, comprising the steps of measuring the transmitted light using a photo-detector, wherein at least a portion of the waveguide has a functional layer adapted to bind the analyte; the optical waveguide is a part of one arm of a Mach-Zehnder interferometer (MZI); the first and second gratings form an optical resonator; and when the analyte binds to the functional layer, the binding changes optical characteristics of the waveguide in combination with the other limitations of claim 35.

Claims 36 and 37 depend from claim 35.

The prior art of record also fails to disclose or reasonably suggest all the limitations recited in independent claims 39 and 40. Specifically, the prior art of record fails to disclose or suggest a method and an apparatus of a device comprising an optical waveguide having a first grating, wherein at least a portion of the waveguide has a function layer adapted to bind an analyte; the device further comprises one or more other waveguide, each having a grating, wherein each grating has an optical reflection band characterized by a center wavelength; at least two gratings have different reflection bands and at least two optical waveguides have different functional layers adapted to bind different analytes in combination with the other limitations of claims 39 and 40.

The prior art of record also fails to disclose or reasonably suggest all the limitations recited in independent claim 41. Specifically, the prior art of record fails to disclose or suggest a device comprising an optical waveguide having a first grating; and a Mach-Zehnder interferometer (MZI) having two arms, wherein at least a portion of the waveguide has a function layer adapted to bind an analyte; a plurality of grooves in the optical form the first grating; at least some of the grooves are covered by the functional layer and one arm includes the optical waveguide in combination with the other limitations of claim 41.

Claims 42 and 43 depend from claim 41.

The prior art of record also fails to disclose or reasonably suggest all the limitations recited in independent claim 44. Specifically, the prior art of record fails to disclose or suggest a method for detecting an analyte comprising transmitting light through an optical waveguide having a first grating and measuring the transmitted light using a photo-detector wherein at least a portion of the waveguide has a function layer adapted to bind an analyte; a plurality of grooves in the optical form the first grating; at least some of the grooves are covered by the functional layer and the optical waveguide is a part of one arm of a MZI in combination with the other limitations of claim 44.

Claims 45 and 46 depend from claim 44.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Doan whose telephone number is (571) 272-2346. The examiner can normally be reached on Monday to Thursday from 6:00am to 3:30pm, second Friday off.
5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

6. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JD

November 22, 2006



JENNIFER DOAN
PRIMARY EXAMINER